

**REMARKS/ARGUMENTS**

By way of this Amendment and Reply, Claims 1-34 and 42-55 have been amended for clarification purposes and to correct informalities, and new Claims 56-61 have been added. Claims 35-41 were previously cancelled. As amended, Claims 1-34 and 42-61 are now pending in this application.

**I. Claim Rejections Under 35 U.S.C. § 112**

In section 2 of the instant Office Action, Claims 1-34 and 42-55 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Examiner asserted that the limitation of “spacing of at least a width of an optical fiber” as recited in the independent claims is not supported by the specification.

By way of this Amendment and Reply, the independent claims have been amended to remove the above-mentioned limitation, rendering the rejection moot. Accordingly, withdrawal of the rejection is respectfully requested.

**II. Claim Rejections Under 35 U.S.C. § 102(e)**

In section 4 of the instant Office Action, Claims 1-4, 7, 8, 10-12, 14-17, 20, 21, and 23-25 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,763,157 to Williams (hereinafter “Williams”). For at least the following reasons, the rejection is respectfully traversed.

**A. Williams Itself Does Not Qualify As Prior Art**

Williams was filed on June 4, 2002, after the filing date (June 29, 2001) of the present application. Williams is a continuation-*in-part* of U.S. Patent No. 6,398,425, filed on May 9, 2001, which claims priority of U.S. Provisional Application Nos. 60/202,800 and 60/202,600, filed on May 9, 2000. Because Williams is a continuation-*in-part* application, it should *not* be assumed that the subject matter relied upon in the Office Action would enjoy the priority date of

the parent applications of Williams. Accordingly, the parent applications, not Williams itself, should be relied upon in the Office Action.

However, to help advance the examination of the present application, Applicant hereby substantively addresses the rejections set forth in the instant Office Action.

B. Williams Does Not Teach, Describe, or Suggest a “Grouping Trench” As Claimed

By way of this Amendment and Reply, independent Claims 1 and 14 have been amended to clarify that a group, which includes at least two devices, is separated from other groups by a “grouping trench.” By contrast, Williams fails to teach, describe, or suggest at least this feature.

Thus, amended independent Claims 1 and 14 are patentable over Williams for at least the reasons set forth above. Claims 2-4, 7, 8, and 10-12, which depend from Claim 1, and Claims 14-17, 20, 21, and 23-25, which depend from Claim 14, are allowable for at least the same reasons. Accordingly, withdrawal of the rejection of Claims 1-4, 7, 8, 10-12, 14-17, 20, 21, and 23-25 is respectfully requested.

**III. Claim Rejections Under 35 U.S.C. § 103(a)**

In section 6 of the instant Office Action, Claims 5-6, 9, 13, 18, 19, 22, 26-34, and 42-55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams. For at least the following reasons, the rejection is respectfully traversed.

A. The Device Trench As Taught By Williams Is Completely Different From the “Grouping Trench” As Claimed

On page 10 of the instant Office Action, the Examiner asserted that:

Williams at least suggests grouping trenches via the disclosure of trenches. If applicant's trench is somehow structurally different from that of Williams, then applicant's claim language should reflect these features. Otherwise, Williams' trenches meet the applicant's claim to grouping trenches.

Applicant respectfully disagrees. The “trenches” as taught by Williams are not the same as the “grouping trenches” as claimed. Indeed, contrary to the Examiner’s assertions, Applicant’s claim language, the “grouping trenches,” already functionally distinguishes such trenches from any other trenches.

In making the above assertions, the Examiner has relied upon col. 4, lines 23-33 of Williams, which reads:

VCSELs can be produced in planar arrays by several methods. Ion-implanted VCSELs can be made with a diameter ranging from 20 to 100 microns. Oxide VCSELs can range from 20 to 60 microns. Etched-post VCSEL arrays are now feasible with VCSEL diameters of 5 to 40 microns; and **with a 2 micron wide trench, can have a pitch as small as about 7 microns**. This provides the potential for a significant planar face density of optical devices per fiber channel, using, for example, 50 or 62.5 micron diameter fiber cores terminated in a suitable connector.  
(Emphasis added.)

As well known in the art, the “pitch” is related to the distance between individual devices, and the associated “trench” is the individual device trench having the purpose of isolating one device from another. Thus, the “trench” as taught by Williams is different from, and does not suggest, the “grouping trench” as claimed, the latter grouping devices into groups, wherein at least one of the groups includes at least two devices of a common device type.

On page 6 of the Office Action, the Examiner also suggested that “the division between transmitters 30a and receivers 30b in Figure 3” may suggest a grouping trench. Applicant respectfully disagrees. Applicant respectfully submits that the division line between the different types of the devices (transmitters 30a and receivers 30b) in Figure 3 of Williams is merely an abstract line illustrating the different regions on the chip, and has nothing to do with a “trench.” Indeed, as the individual devices are well isolated by the device trenches – failing to do so would mean a defective component or a defective chip, as known in the art – there is no reason to etch another trench separating different regions on the chip.

B. Williams Teaches Away From the Claimed Embodiments

As discussed above, Williams teaches device trenches that isolate individual devices, not the claimed “grouping trenches.” Further, Williams directly teaches away from the claimed embodiments. This is because the very purpose of the device trenches is to isolate the individual devices. As well known in the art, once isolated by such device trenches, the devices can no longer have carriers moving among them. By contrast, in accordance with embodiments of the invention, the “grouping trenches” advantageously “ensure isolation among the individual groups **while allowing for carrier movement among the devices within the group** via the electrically conductive substrate.” (See, e.g., paragraph [0035] of the published application – Pub. No. 20030011851; emphasis added.)

Thus, Williams teaches away from the claimed embodiments. Applicant respectfully submits that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). The Supreme Court *KSR* decision does not relieve the Examiners from considering the prior art reference as a whole.

Further, it is improper to modify Williams to arrive at the claimed embodiments. If Williams were to be modified to have carrier movement among the devices within a group, the very purpose of isolating the individual devices as taught by Williams would be defeated. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In view of the above, the rejection under 35 U.S.C. § 103(a) cannot be properly maintained. Thus, Claims 5-6, 9, 13, 18, 19, 22, 26-34, and 42-55 are patentable over Williams for at least the reasons set forth above. Accordingly, Applicant hereby respectfully requests withdrawal of the rejection.

C. Applicant Respectfully Traverses the Official Notices Given in the Office Action

On page 5 of the instant Office Action, Official Notices were given that “the claimed [Bragg reflector or distributed feedback] lasers are well known in the art,” and that “the claimed [bottom receiving] photodetectors are well known in the art.” Applicant respectfully traverses such Official Notices, and hereby respectfully requests that documentary evidence be provided under 37 CFR 1.104(c)(2) if the rejection is to be maintained. If the Examiner has relied upon his personal knowledge, Applicant hereby respectfully requests that an affidavit be provided under 37 CFR 1.104(d)(2).

Applicant respectfully submits that the claimed “Bragg reflector or distributed feedback lasers” and the “bottom receiving photodetectors” are *not* well known in the art in the context of the requirements of the independent claims. For example, it is *not* well known in the art how the Bragg reflector or distributed feedback lasers would be disposed in groups separated by grouping trenches. Further, as discussed above with respect to Williams, if the documentary evidence were provided, the references may well teach away from each other or from their combinations.

IV. New Claims 56-61

Newly added Claim 56 depends from Claim 1, and thus should be allowable for at least the reasons set forth above with respect to Claim 1. In addition, Claim 56 recites, *inter alia*, that “the at least two of optical devices in the group are configured to have carrier movement therebetween.” Support for this new claim can be found in, for example, paragraph [0035] of the published application. By contrast, Williams teaches directly away from this feature. Thus, Claim 56 is patentable over Williams for at least this additional reason.

Newly added Claim 57 recites, *inter alia*, that “the common substrate is electrically conductive, and wherein the carrier movement is through the electrically conductive common substrate.” Support for this new claim can be found in, for example, paragraph [0035] of the

published application. Claim 57 depends from Claim 56 and thus should be allowable for at least the reasons discussed above with respect to Claim 56.

Newly added Claim 58 recites, *inter alia*, that “the optical devices within one group are separated by at least one separation trench configured to isolate individual device contacts.” Support for this new claim can be found in, for example, paragraph [0037] of the published application. Claim 58 depends from Claim 1, and thus should be allowable for at least the reasons set forth above with respect to Claim 1.

Newly added Claim 59 recites, *inter alia*, that “the controller is coupled to the optical devices via contact pads.” Support for this new claim can be found in, for example, Fig. 3 and the associated text in the application. Claim 59 depends from Claim 1, and thus should be allowable for at least the reasons set forth above with respect to Claim 1.

Newly added Claim 60 recites, *inter alia*, that “the controller is disposed on an electronic chip, and wherein the optical devices are flip-chip bonded to the electronic chip.” Support for this new claim can be found in, for example, paragraph [0033] of the published application. Claim 60 depends from Claim 59, and thus should be allowable for at least the reasons set forth above with respect to Claim 59.

Newly added Claim 61 recites, *inter alia*, that “connecting each of the at least two devices to a control circuit comprises flip-chip bonding the at least two devices to an electronic chip containing the control circuit.” Support for this new claim can be found in, for example, paragraph [0033] of the published application. Claim 61 depends from Claim 33, and thus should be allowable for at least the reasons set forth above with respect to Claim 33.

In view of the above, Applicant respectfully requests entry and favorable consideration of newly added Claims 56-61.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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